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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,321	02/19/2004	Haiming Wang	TWI-23910	6131

28584 7590 07/07/2005

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EXAMINER	
AKANBI, ISIAKA O	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/782,321	WANG ET AL.	
	Examiner	Art Unit	
	Isiaka O. Akanbi	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Information Disclosure Statement

The information disclosure statement filed 19 February 2004 has been entered and reference considered by the examiner.

Drawings

The examiner approves the drawings filed 19 February 2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rotter et al. (6,784,991) in view of Wagner (6,256,097).

As to claim 1, Rotter discloses optical measurement system 100 (Disclosure of Invention, col. 6, lines 5-14; Fig. 1) comprising: a light source 110, a focusing optical element 120, a polarization system 130 and a light detection and processing system 140. Rotter further discloses the light source 110 may provide a source beam of broadband light in a wide spectral range of wavelength, such as ultraviolet, infrared, and visible light, depending on the desired application. The detection system 140 comprises a number of components that include lenses (760), rotating compensators (776), rotating analyzers (780) and processors (748) (see col. 6, line 48-51). Rotter differs from the claimed invention in that it lacks measurement and elimination of the ellipsometric

effects of the objective lens, however, measurement and elimination of the ellipsometric effects of the objective lens is well known as taught by Wagner. Wagner discloses a method for measuring non-sample optical system ellipsometric effects of the ellipsometer that includes compensating for ellipsometric effects of the optical system (col. 3, line 44-59). It would have been obvious to one having ordinary skill in the art at the time of invention to incorporate the teachings of Rotter and combine Wagner to allow correction of the measured changes in polarization state of the light interacted with the optical system to eliminate error introduced therein by the non-sample optical system ellipsometric effects.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rotter et al. (6,784,991) Wagner (6,256,097) and further in view of Aspnes et al. (6320,657). Rotter and Wagner provides everything claimed, as applied above, in addition the ellipsometric effect of the optical components are eliminated (see claim 1). Rotter and Wagner differs from the claimed invention in that harmonic analysis of the output signals and the use of retardation and azimuth angle are not provided, however to do so is well known as taught by Aspnes. Aspnes discloses a method that includes performing a harmonic analysis on the output signal from the detector to determine normalized Fourier coefficients (col.7, line 46 – 56) and to measure the retardation and the azimuth angle of the optical components. It would have been obvious to one having ordinary skill in the art at the time of invention to modify the teachings of Rotter and Wagner with that of Aspens to configure a processor for the purpose of performing a harmonic analysis to determined the polarization state of the light after interactions with the analyzer, and to

determined the ellipsometric physical parameters of the sample, in addition use the normalized Fourier coefficients to provides representation for the intensity transmitted through the rotating-compensator/analyzer combination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 4 is rejected under 35 U.S.C. 102(e) as being anticipated by Rotter (6,784,991). With respect to claim 4, Rotter teaches an ellipsometer (Disclosure of Invention, Fig. 1, Col. 6, line 5–10) comprising optical measurement system (Fig. 1, #100) comprises a light source (Fig. 1, #110), a focusing optical element (Fig. 1, #120) and (Fig. 6, # 732) the beam is focused normal to the surface of the sample, a polarization system (Fig. #130) and a light detection and processing system (Fig. 1, #140). Rotter further teaches that the detection system (Fig. 1, #140) comprises a number of components (e.g., lenses (760), rotating compensators (766), rotating analyzers (780), processors (748)) by which the reflected polarized source beam is measured and processed (see Disclosure of Invention, Col. 6, line 48–52).

Furthermore, Rotter teaches a quad-cell detector (Fig. 6, #740) with four radially disposed quadrants that each intercept one quarter of the source beam and generate a separate output signal proportional to the power (i.e. intensity) of the portion of the source beams striking that quadrant accounting for beams of different angles of incidence. The output signals from each quadrant are sent to a processor (Fig. 6, #748). The processor (Fig. 6, #748) performs various calculations to generate ellipsometric data relating to the specimen (Fig. 6, #704)(see Disclosure of Invention, Col. 9, line 67-Col. 10, line 1-8) and (col. 10, line 57-col. 11, line 2). As far as polarizer creating interference, polarizer (736) creates interference (col. 2, line 63-69). An optical element for focusing the probe beam substantially normal to the surface of the sample such that various rays within the focused probe beam create a spread of angles of incidence is met by (Fig. 6, 732/733 and 704).

Allowable Subject Matter

Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of the record fails to provide or suggest an ellipsometer having a detector subdivided to provide eight coefficients for measuring the retardation and the azimuth angle of the objective lens, in combination with the rest of the limitations of claim 3.

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory J. Toatley, Jr.
Supervisory Patent Examiner
5 Jan 05